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MYCOLOGIA

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NORTH AMERICAN SPECIES OF ALEURIA AND ALEURINA

(WITH PLATES 142–144, CONTAINING 10 FIGURES)

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The genus *Aleuria* was founded by Fuckel, and originally comprised the two species *Aleuria aurantia* (Pers.) Fuckel and *Aleuria rhenana,* the latter species described by the author of the genus. The genus has been used in various ways but in recent years has come to be restricted by some writers to the reticulate-spored species of Pezizeae and in this sense it is here employed. Four such species are known to North America, all of which are characterized by the bright orange color of the hymenium with the whitish exterior. The habitats of the four species are quite distinct and three of these are shown in the accompanying photographs.

Aleurina was used by Saccardo as a subgenus of *Phaeopezia* and differs from *Aleuria* in that the spores are colored. While the reticulations in the spores of the type species are less distinct than in the various species of *Aleuria,* there is a strong resemblance between the markings of the spores of the various species of *Aleuria* and the type species of *Aleurina,* which is here regarded as a distinct genus. *Peziza retiderma,* which was made the type of Saccardo's subgenus, was originally described from material collected at Portland, Maine. Recent collections of this species at Portland, Connecticut, has furnished material for the accompanying illustrations and descriptions.

[MYCOLOGIA for September, 1914 (6: 221–272), was issued September 26, 1914.]

ALEURIA Fuckel, Symb. Myc. 325. 1869

Plants gregarious, scattered or cespitose, sessile or stipitate, fleshy, bright-colored, smooth or clothed externally with delicate white mycelium; asci cylindric, 8-spored; spores ellipsoid, at first smooth, at maturity reticulate.

Type species, *Peziza aurantia* Pers.

Spores not marked with ring at either end.
  Plants sessile, at maturity large, reaching a diameter of several cm. *A. aurantia.*
  Plants stipitate, medium-sized, seldom exceeding 1 or 2 cm. in diameter.
    Plants occurring in coniferous woods, stems usually long and springing from a dense mass of white mycelium............*A. rhenana.*
    Plants occurring among mosses in deciduous woods, stems short and not springing from a dense mass of white mycelium....*A. rutilans.*
Spores marked with a ring at either end.....................*A. bicucullata.*

ALEURIA AURANTIA (Pers.) Fuckel, Symb. Myc. 326. 1869

Elvela coccinea Schaeff. Fung. Bavar. 4: 100. 1774. Not *Elvela coccinea* Scop. 1772.
Peziza coccinea Bull. Herb. Fr. *pl. 474.* 1789.
Helvella coccinea Bolton, Fungi Halifax 3: 100. 1789.
Peziza aurantia Pers. Obs. Myc. 2: 76. 1797.
Otidea aurantia Massee, Fungus Fl. 4: 448. 1895.
?*Aleuria wisconsinensis* Rehm, Ann. Myc. 2: 34. 1904.

Plants gregarious or cespitose, at first globose, opening with a circular aperture and gradually expanding, at maturity varying in size from a few mm. to 5 or 6 cm. (rarely even larger), shallow cup-shaped and usually regular in form when young becoming irregular and often variously contorted with age, often from mutual pressure, rarely one sided and *Otidea*-like, occasionally discoid with the hymenium almost plane, bright-orange within, color fading in dried specimens, externally whitish-pruinose; asci cylindric or subcylindric, 12–15 μ in diameter and 175–250 μ long; spores 1-seriate, usually obliquely arranged in the ascus with the ends often overlapping, at first smooth and usually containing two (rarely more) large oil-drops, at maturity rough, roughenings taking the form of reticulations which are shallow and usually with one, rarely two, prominent projections at either end, 18–22 × 9–10 μ when mature, a little smaller when young; paraphyses strongly and rather abruptly enlarged above, often with the ends subglobose, reaching a diameter of 7 or 8 μ, filled with orange granules.

On naked soil in woods or open places, often on clayey soil.

TYPE LOCALITY: Europe.

DISTRIBUTION: Newfoundland to Washington, California and West Virginia; also in Europe.

ILLUSTRATIONS: Bolton, Fungi Halifax, *pl. 100;* Bull. Herb. Fr. *pl. 474;* Bull. Lab. Nat. Hist. State Univ. Iowa, **6**: *pl. 17, f. 1;* Cooke, Mycogr. *pl. 52, f. 203;* Fl. Danici *pl. 157;* Schaeff. Fung. Bavar. *pl. 148;* Sow. Engl. Fungi *pl. 78;* Boud. Ic. Myc. *pl. 313.*

EXSICCATI: Ellis, N. Am. Fungi *836;* Ellis & Ev. Fungi Columb. *15.*

ALEURIA RHENANA Fuckel, Symb. Myc. 325. 1869

?Peziza radiculata Sow. Engl. Fungi *pl. 114* (with descr.) 1797.
Peziza splendens Quél. Champ. Jura 388. 1872.
Sarcoscypha rhenana Sacc. Syll. Fung. **8**: 157. 1889.
?Sarcoscypha radiculata Sacc. Syll. Fung. **8**: 156. 1889.

Plants gregarious or cespitose, stipitate with the stems variable in length but reaching 1 or 2 cm., irregular, tomentose and attached by a dense growth of white mycelium which penetrates into the substratum binding together the leaves, twigs and leaf-mould in which they grow, the stems themselves often clinging together in clusters, abruptly expanding above into the cup which reaches a diameter of 1 or 2 cm. and about half as deep, exterior of the cup and stem white or whitish, the cups pruinose or subtomentose with poorly developed hair-like structures, hymenium bright-orange, color fading in dried specimens; asci cylindric above, tapering below, reaching a length of 300–350 μ and 15–17 μ thick, often becoming strongly spirally twisted at least in dried specimens; spores 1-seriate, obliquely arranged and often with the ends slightly overlapping, ellipsoid, at first smooth and with usually two large oil-drops, becoming rough, roughenings taking the form of reticulations with the meshes of the reticulations about 3 μ in diameter, rarely 5 or 6 μ, ridges extending 1–2 μ beyond the periphery of the spore, entire spore 23–27 × 12–16 μ; paraphyses enlarged above, about 6 μ in diameter, filled with orange granules.

On the ground in coniferous woods.

TYPE LOCALITY: Europe.

DISTRIBUTION: Pennsylvania to Alabama and west to Washington.

ILLUSTRATIONS: Boud. Ic. Myc. *pl. 314;* Cooke Mycogr. *pl. 112, f. 400.*

ALEURIA RUTILANS (Fries) Gill. Champ. Fr. Discom. 53. 1879
Peziza rutilans Fries, Syst. Myc. **2**: 68. 1822.
Leucoloma rutilans Fuckel, Symb. Myc. 318. 1869.
Humaria rutilans Sacc. Syll. Fung. **8**: 133.
Sarcoscypha albovillosa Rehm, Ann. Myc. **2**: 33. 1904.

Plants gregarious or scattered, stipitate with the stem short, about 2 mm. thick and gradually expanding above into the cup and reaching a maximum length of about 5 mm., cup at first closed and of about the same diameter as the stem, gradually expanding and becoming turbinate with the margin more or less crenate and fringed, hymenium bright-orange, externally paler and tomentose, or with a few pale hairs about the margin of the cup, reaching a diameter of 1 cm. or occasionally larger; asci cylindric or subcylindric, gradually tapering below into a stem-like base, 300–350 × 20 μ; spores usually 1-seriate, obliquely arranged in the ascus with the ends overlapping, containing usually one or more, rarely two, large oil-drops and often several smaller ones, at maturity delicately reticulated, reticulations sometimes indistinct and broken, ellipsoid with the ends somewhat narrowed, 20–25 × 12–14 μ; paraphyses slightly enlarged above and densely filled with oil-drops and granules, about 4 μ in diameter at their apices.

On soil among mosses (especially *Polytrichum*), apparently growing on the dead leaves and often hidden by the living plants.

TYPE LOCALITY: Europe.

DISTRIBUTION: New Hampshire and New York to Iowa; also in Europe.

ILLUSTRATIONS: Boud. Ic. Myc. *pl. 315;* Grevillea **22**: 108, *f. 1–6;* Bull. Lab. Nat. Hist. State Univ. Iowa **6**: *pl. 17, f. 2.*

ALEURIA BICUCULLATA Boud. Bull. Bot. Soc. Fr. **28**: 93. 1881
Peziza bicucullata Boud. Bull. Soc. Myc. Fr. **1**: 103. 1885.
Humaria bicucullata Quél. Ench. Fung. 288. 1886.

Plants gregarious or crowded, at first subglobose, expanding and at maturity subdiscoid or often irregular from mutual pressure, 5 mm. to 1 cm. in diameter, at maturity pale-orange, externally a little paler and minutely roughened; asci cylindric above, reaching a diameter of 12–15 μ; spores obliquely 1-seriate and closely pressed together and showing a ring-like or hood-like process at either end on being separated, smooth and containing one or two oil-drops, at maturity strongly roughened, roughenings taking the form of irregular and often broken reticulations, ridges of reticulations conspicuous and giving rise to rather sharp-pointed spine-like projections, terminal projections larger and giving the spore an apiculate appearance, entire spore 20–23 × 10–12 μ (including roughenings); paraphyses rather strongly enlarged above where they reach a diameter of about 5 μ.

On bare ground or among mosses.

TYPE LOCALITY: France.

DISTRIBUTION: Wisconsin; also in Europe.

ILLUSTRATIONS: Bull. Soc. Bot. Fr. **28**: *pl. 3, f. 3;* Boud. Ic. Myc. *pl. 318.*

Aleurina (Sacc.) Seaver, gen. nov.

Phaeopezia § *Aleurina* Sacc. Syll. Fung. **8**: 472. 1889.

Plants medium sized, cup-shaped, fleshy or subfleshy dark-colored; asci 8-spored; spores ellipsoid, at first hyaline, becoming smoky-brown, rough, roughenings often taking the form of indistinct reticulations; paraphyses stout.

Type species, *Peziza retiderma* Cooke.

Aleurina retiderma (Cooke)

Peziza retiderma Cooke, Mycographia 176. (1877.)

Phaeopezia retiderma Sacc. Syll. Fung. **8**: 472. 1889.

Plants gregarious or occasionally cespitose, rather deep cup-shaped, regular in form or becoming irregularly contorted, irregularity often resulting from mutual pressure, at first brown and lighter externally, hymenium soon becoming darker and at maturity almost black, exterior also becoming darker but remaining lighter than the hymenium, reaching a diameter of 2–5 cm. at maturity; asci cylindric above, rather abruptly tapering below into a stem-like base, reaching a length of 275 μ and a diameter of 12–14 μ; spores 1-seriate, ellipsoid, at first hyaline, smooth and containing one or two oil-drops, gradually becoming roughened, smoky-brown, roughenings usually giving rise to one large protuberance at either end of the spore and irregular reticulate markings over the surface of the spore, the reticulate ridges so arranged as to give the spore a somewhat striate appearance, entire spore at maturity 15–17 × 10 μ; paraphyses strongly enlarged above, where they reach a diameter of 8 μ, minutely granular within and dilutely colored.

On the ground in woods often among mosses.

TYPE LOCALITY: Portland, Maine.

DISTRIBUTION: New York to Maine and Wisconsin.

ILLUSTRATION: Cooke, Mycographia, *pl. 79, f. 306.*

Aleurina aquehongensis sp. nov.

Plants gregarious or scattered, sessile, discoid to shallow cup-shaped, reaching a diameter of about 1 cm., externally slightly roughened, entirely brownish-black, with a slightly greenish tint to the hymenium which appears to be due to the spores which have dusted out of the asci; asci cylindric above, tapering below into a rather irregular stem-like base, reaching a length of 300–350 μ and a diameter of 15–17 μ; spores 1-seriate or occasionally slightly crowded, ellipsoid to subfusoid with the ends narrowed and containing one or two oil-drops, at first smooth, becoming rough, roughenings taking the form of irregular reticulations, mature spore $22–25 \times 10–12 \mu$, hyaline, becoming pale smoky-brown, color more or less evanescent; paraphyses rather strongly enlarged above, reaching a diameter of 6 μ, pale-brown.

On the ground in a damp place.

Type collected by N. L. Britton and F. J. Seaver near Oakwood Heights, Staten Island, September 5, 1914.

DISTRIBUTION: Known only from the type locality.

EXPLANATION OF PLATES CXLII–CXLIV

PLATE CXLII

Upper figure, *Aleuria rutilans* (Fries) Gill. Photographed from material collected at Hudson Falls, New York, by Mr. Stewart H. Burnham.

Lower figures, *Aleuria rhenana* Fuckel. Photographed from material collected at Mill City, Oregon, by Dr. W. A. Murrill.

PLATE CXLIII

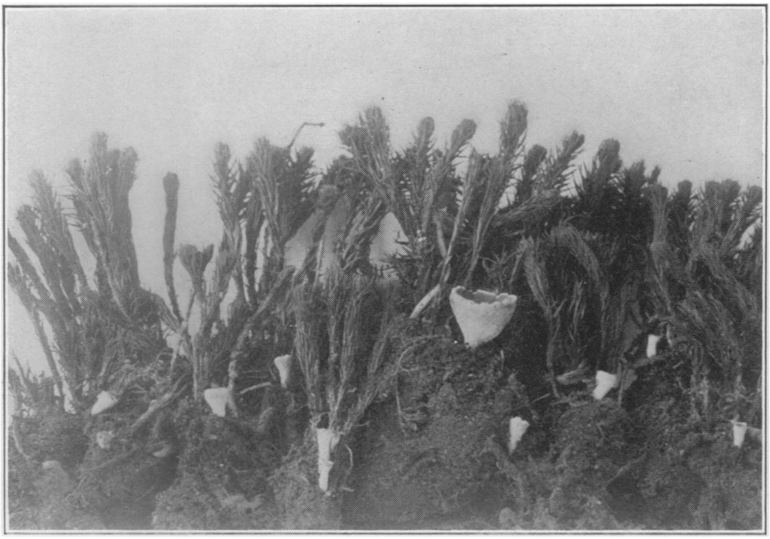
Upper figure, *Aleuria aurantia* (Pers.) Fuckel. Photographed from material collected in the New York Botanical Garden, by the writer.

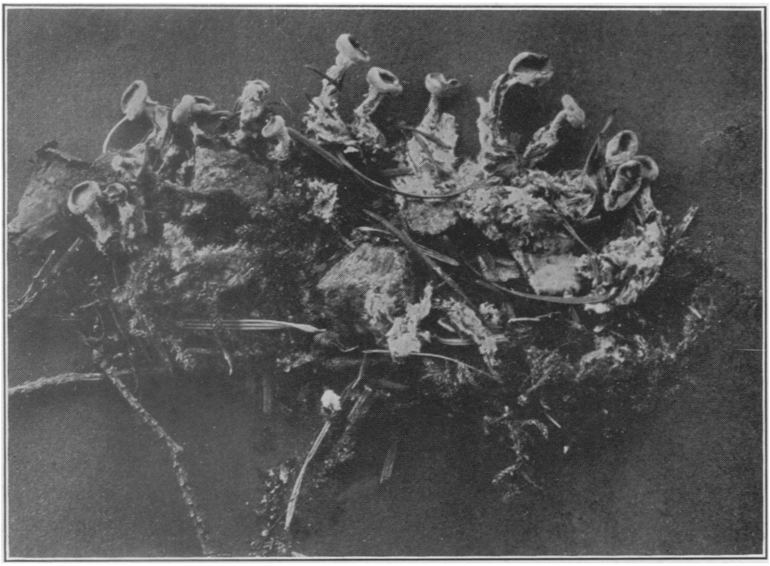
Lower figure, *Aleurina retiderma* (Cooke) Seaver. Photographed from material collected at Portland, Connecticut, by the writer.

PLATE CXLIV

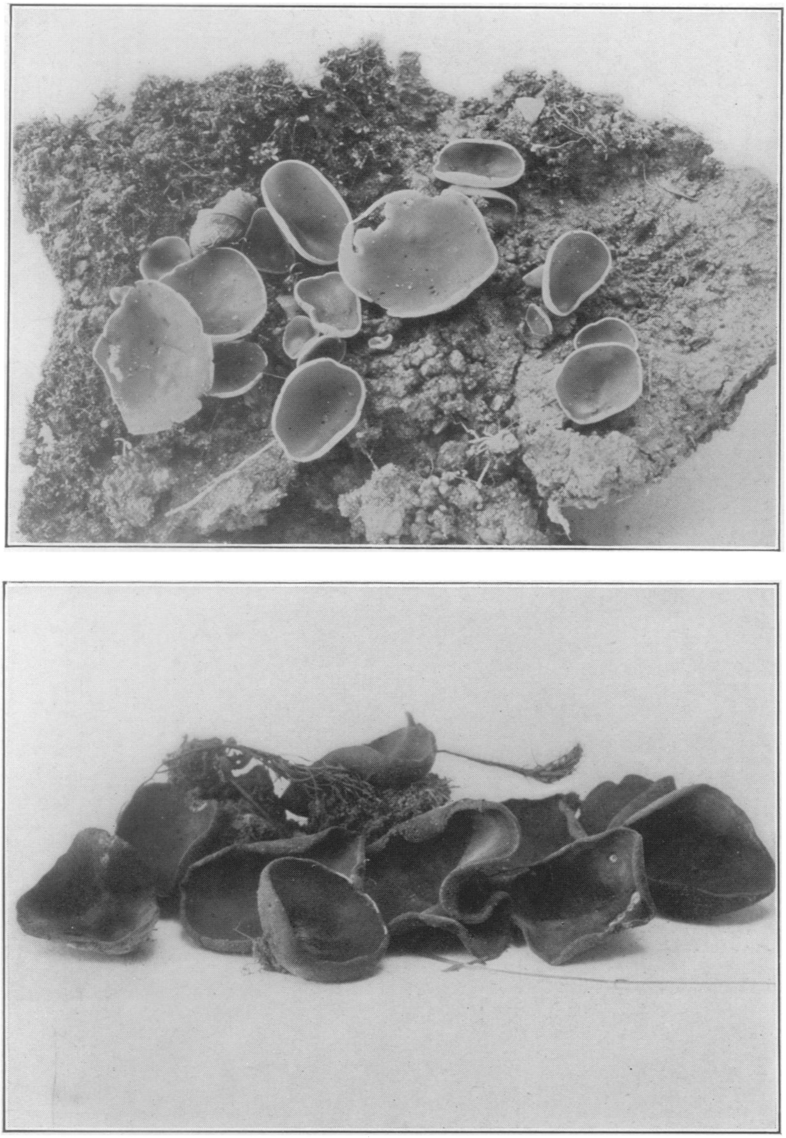
Spores and paraphyses drawn with the aid of the camera lucida to a common scale. Where the base of the ascus is shown, it is doubled back to save space.

1. *Aleuria aurantia* (Pers.) Fuckel.
2. *Aleuria rhenana* Fuckel. This drawing shows the spirally coiled base of the ascus as it often occurs in this species.
3. *Aleuria bicucullata* Boud.
4. *Aleuria rutilans* (Fries) Gill.
5. *Aleurina aquehongensis* Seaver.
6. *Aleurina retiderma* (Cooke) Sacc.

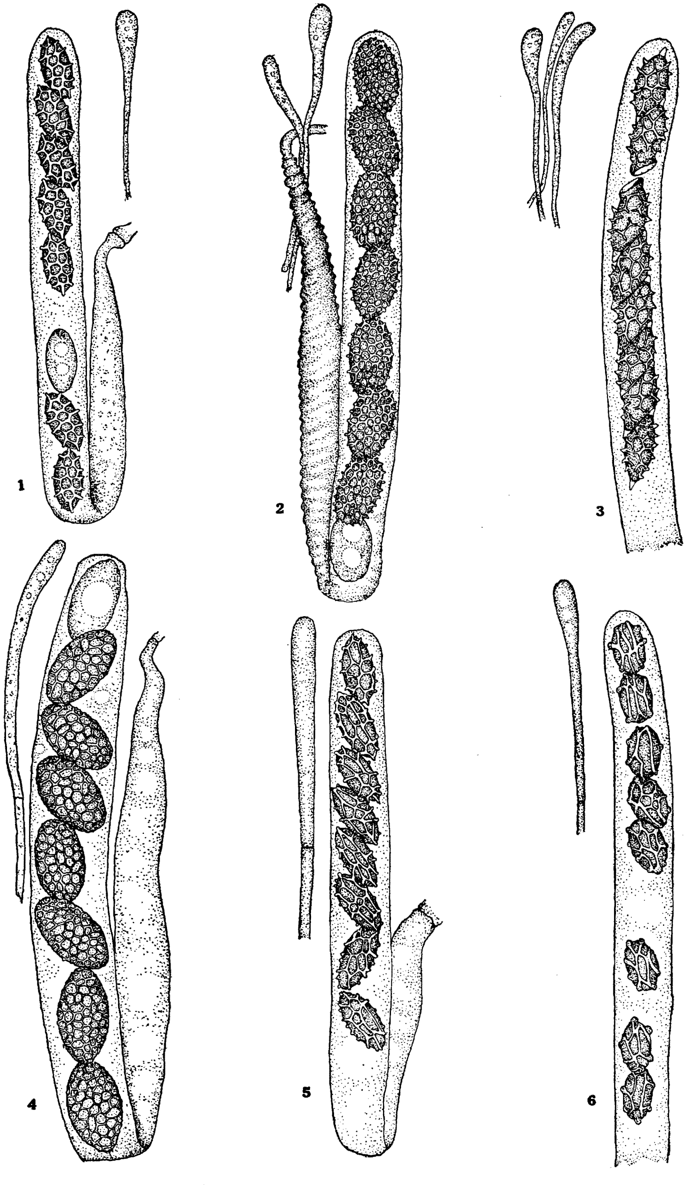




ALEURIA RUTILANS (FRIES) GILL.
ALEURIA RHENANA FUCKEL



ALEURIA AURANTIA (PERS.) FUCKEL
ALEURINA RETIDERMA (COOKE) SEAVER



ALEURIA AND ALEURINA